Claim Rejections – 35 U.S.C. § 103

The Applicant respectfully submits that claims 1, 2, and 3 of the invention are patentable.

Claim 1 was rejected by the Examiner as unpatentable over a suggested combination of Capelle (U.S. Patent 2,917,954), Chen (U.S. Patents 6,742,421 or 6,622,597), Cruz et al. (U.S. Patent 5,431,075), or Lin (U.S. Patent 6,679,142). All of the foregoing references disclose a tool used to tighten or align a given member, and further disclose a bit element that is used by the tool.

The Applicant's claimed invention is directed to a bit that can drive a capped fastener into a material, such as concrete, while providing enough strength during this high-torque operation to withstand breakage at the bit's tip. The high torque required to drive such fasteners into concrete or other similar materials renders unsuitable the bits taught by Capelle, Chen, Cruz et al., and Lin, because such general usage bits tend to break when subjected to the torsion stresses generated. Indeed, the capped fasteners described are currently driven by a special tool having a threaded tip that engages the interior threading of the hollow cap. This threaded-tipped tool is able to withstand, without breakage, the torsion stresses generated as it drives the capped fastener, but the high torque required to drive the fastener often causes the threaded portion of the tool to engage the interior threading of the hollow cap too tightly. As one attempts to disengage the threaded-tipped tool from the hollow cap, the fastener is forced in a disengaging or loosening direction, causing the fastener to break or to damage the source material it is embedded in.

The Applicant's claimed invention is a specially designed bit that can provide the torque necessary to drive the capped fastener without using the interior threading of the fastener's hollow cap, which is intended for receiving another threaded member, such as the threaded portion of a hurricane shutter. The claimed invention is able to provide the high torque that is necessary without breakage by virtue of a unique design consideration—the radius of curvature of the bit's tapered tip. The tip's radius of

curvature is designed to optimally distribute torsion stresses generated during operation along the tip's curved surfaces, thereby making the bit more resistant to breakage.

Claim 1 expresses this design consideration by stating that the bit's driver portion includes "a pair of laterally opposed concave surfaces tapering at a predetermined radius of curvature of between 50 % and about 150 % of said inner minor diameter [of the hollow cap] to a generally rectangular flat headed tip . . . ." The Applicant respectfully submits that it would not have been obvious to one having ordinary skill in the art at the time the invention was made to overcome the high-torque problem of the capped fastener by altering or scaling the dimensions of the bits taught by Capelle, Chen, Cruz et al., or Lin to have the claimed tapered tip. Thus, the Applicant respectfully submits that claim 1 is patentable because none of the cited references alone, or in any proper combination, teach or suggest a bit having a predetermined radius of curvature.

Claims 2 and 3 were rejected by the Examiner as unpatentable over a suggested combination of Frühm (U.S. Patent 6,352,011), Li (U.S. Patent 6,363,819), or Liou (U.S. Patent 6,725,749), in view of Pool et al. (U.S. Patent 5,555,781). Frühm, Li, and Liou each disclose a tool with a hexagonal bit having no cylindrical aligning portion, and therefore are quite unlike the bit claimed in claim 2 of the present invention. Pool et al. teach construction of a bit from steel of a given hardness, a subject addressed by claim 3.

Although expressed differently, claim 2 contains limitations very similar to those in claim 1 as discussed above. Namely, claim 2 expresses in inches the radius of curvature of the bit's tapered tip, instead of as a percentage of the hollow cap's inner diameter. The relevant portion of claim 2 reads: "a pair of laterally opposed concave surfaces tapering at a predetermined radius of curvature of between 3/32 inch and about 7/32 inch to a generally rectangular flat headed tip . . . ."

The Applicant respectfully submits that the dimensional limitation of the radius of curvature at the bit's tip serves to overcome the high-torque problem of the capped fastener, and that this limitation distinguishes the claimed invention from the cited references. The Applicant further submits that it would not have been obvious to one having ordinary skill in the art at the time the invention was made to overcome the high-torque problem of the capped fastener by altering or scaling the dimensions of the bits

taught by Frühm, Li, Liou, and Pool et al. to the range expressed in claim 2. Thus, claim 2 is submitted as patentable because none of the cited references alone, or in any proper combination, teach or suggest a bit having the claimed dimensions.

Claim 3 depends from claim 2, and is therefore patentable over Frühm, Li, Liou, and Pool et al. for at least the same reasons as claim 2. In addition to specifying the type of steel and hardness used for the claimed invention, claim 3 adds another dimensional limitation to the radius of curvature of the bit's tapered tip, specifying it as "about 3/16 inch." This additional limitation further distinguishes claim 3 from the cited references.

If the Examiner believes it would help to advance the prosecution, the undersigned attorney would welcome the opportunity to further discuss the application in a telephone interview and can be reached at (312) 201-0011.

For the foregoing reasons, the Applicant respectfully requests reconsideration and allowance of all three claims.

Respectfully submitted,

Dated this 16th day of August, 2004.

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